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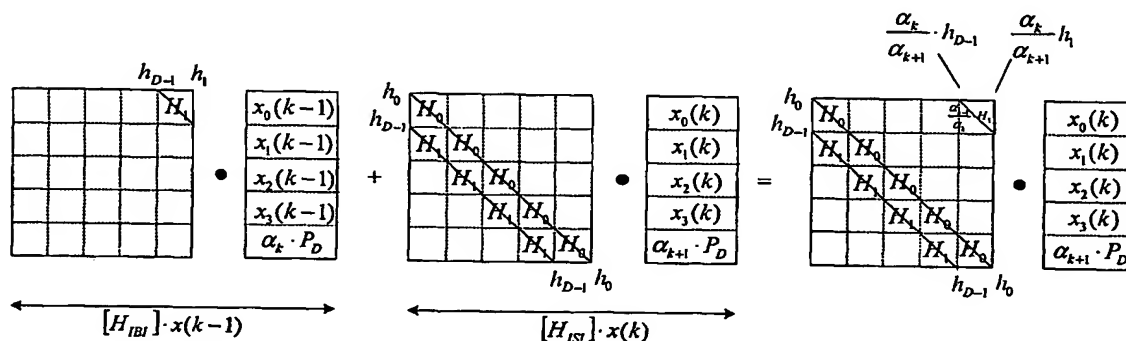
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(54) Title: CHANNEL ESTIMATION USING THE GUARD INTERVAL OF A MULTICARRIER SIGNAL



(57) Abstract: A method of communication using Orthogonal Frequency Division Multiplexing ("OFDM") comprises generating bit streams ($b_n \in (0,1), n=0,1,\dots,K-1$) and the corresponding sets of frequency domain carrier amplitudes ($X_0(k)$ to $X_N(k)$), where k is the OFDM symbol number, modulated as OFDM symbols to be transmitted from a transmitter. Prefixes are inserted as guard intervals in the sample streams and the OFDM symbols are transmitted from the transmitter to a receiver. The receiver uses information from the prefixes to estimate the Channel Impulse Response ($H^{(F)}_D$) of the transmission channels and uses the estimated Channel Impulse Response ($\hat{H}^{(F)}_D$) to demodulate the bit streams in the signals received. The prefixes (α_{k,c_0} to $\alpha_{k,c_{D-1}}$) are deterministic and are known to the receiver as well as to the transmitter. Preferably, the prefixes (α_{k,c_0} to $\alpha_{k,c_{D-1}}$) comprise a vector (P_D) that is common to said symbols multiplied by at least one weighting factor (α_k). The weighting factor (α_k) preferably differs from one symbol to another but the elements of a given vector (P_D) are multiplied by the same weighting factor. Preferably, the weighting factor (α_k) has a complex pseudo-random value.

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